In this paper, a new class of wideband phase shifters on multimode resonator is proposed and developed. Compared with its conventional counterparts, these new phase shifters have a few advantageous features such as simple structure, intrinsic wideband characteristic, large phase-shift value, and easy adjustment in phase shift. The phase properties of multimode resonator are at first studied to derive the quantitative relationship between the phase slope and their respective resonant frequencies. On the one hand, a prescribed wideband phase shift can be achieved by adjusting the impedance ratio R_z of the multimode resonator and the electrical length of the reference line. On the other hand, the wide operating band can be intrinsically obtained over a frequency range covered by multiple resonant frequencies in the multimode resonator. In this context, the transmission-line models of the proposed phase shifters are deduced and synthesized to design these phase shifters with a prescribed phase shift value and return loss within the operating band. Moreover, the synthesized model can be directly mapped into all the physical dimensions, thus allowing for a quick design process. Finally, two 180° wideband phase shifters are designed, fabricated, and tested to verify the proposed design method and predicted frequency responses.